

# PATENT COOPERATION TREATY

TRANSLATION

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing  
(day/month/year)

Applicant's or agent's file reference

**BT-F003-PCT0**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/JP2005/000788**

International filing date (day/month/year)

**21.01.2005**

Priority date (day/month/year)

**22.01.2004**

International Patent Classification (IPC) or both national classification and IPC

Applicant

**BONDTECH INC.**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/000788

Box No. I	Basis of this opinion
1.	<p>With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).</p>
2.	<p>With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:</p> <p>a. type of material</p> <p><input type="checkbox"/> a sequence listing</p> <p><input type="checkbox"/> table(s) related to the sequence listing</p> <p>b. format of material</p> <p><input type="checkbox"/> in written format</p> <p><input type="checkbox"/> in computer readable form</p> <p>c. time of filing/furnishing</p> <p><input type="checkbox"/> contained in the international application as filed.</p> <p><input type="checkbox"/> filed together with the international application in computer readable form.</p> <p><input type="checkbox"/> furnished subsequently to this Authority for the purposes of search.</p>
3.	<p><input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.</p>
4.	<p>Additional comments:</p>

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/000788

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 26-49

because:

☐ the said international application, or the said claims Nos. \_\_\_\_\_  
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 26-49  
are so unclear that no meaningful opinion could be formed (*specify*):

Claims 26-49 include a limitation on the joint portion itself and the joint object itself such that "the hardness of the joint portion is 200 Hv or less", but the subject of the invention is strictly a "jointing apparatus". How the limitation on the joint portion itself and the joint object itself is reflected for the structure of the "jointing apparatus" is unclear.

☐ the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported  
by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. \_\_\_\_\_

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form ☐ has not been furnished  
☐ does not comply with the standard

the computer readable form ☐ has not been furnished  
☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/JP2005/000788

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
<b>1. Statement</b>			
Novelty (N)	Claims	1-25	YES
	Claims		NO
Inventive step (IS)	Claims	3-4, 9-10, 13-23	YES
	Claims	1-2, 5-8, 11-12, 24-25	NO
Industrial applicability (IA)	Claims	1-25	YES
	Claims		NO
<b>2. Citations and explanations:</b>			
<p>Document 1: JP, 2000-138255, A (NEC Corporation), 16 May, 2000 (16.05.00), full text, Figs. 1-16</p> <p>Document 2: JP, 63-101085, A (Fuji Electric Co., Ltd.), 06 May, 1988 (06.05.88), full text, Fig. 1</p> <p>Document 3: JP, 2001-351892, A (Toray Engineering Co., Ltd.), 21 December, 2001 (21.12.01), full text, Figs. 1-2</p> <p>Document 4: JP, 57-195593, A (Hitachi, Ltd.), 01 December, 1982 (01.12.82)</p> <p>Document 5: JP, 8-181144, A (Matsushita Electric Industrial Co., Ltd.), 12 July, 1996 (12.07.96), full text, Figs. 1-11, &amp; US, 5686353, A, &amp; EP, 720226, A2, &amp; CN, 1130306, A, &amp; CN, 1248062, A, &amp; KR, 239286, B</p> <p>The subject matters of claims 1-2 and 5 do not appear to involve an inventive step in view of documents 1-3 cited in the ISR. Establishing the mount connection of document 1 under normal temperature as suggested in document 2 or 3 is easy for a person skilled in the art.</p> <p>The subject matters of claims 6-8 do not appear to involve an inventive step in view of documents 1-3 and document 4 cited in the ISR. Carrying out the plasma processing of document 1 by the pulse generation electric power source as suggested in document 4 (Fig. 2) is easy for a person skilled in the art. At this time, making a bias voltage of the electric power source and a pulse width adjustable is merely a matter of design variation.</p> <p>The subject matters of claims 11-12 do not appear to involve an inventive step in view of documents 1-4 and document 5 cited in the ISR. Performing leveling to match the height of each bump in a chip to the actual height of each pad in a tape as suggested in document 5 in the mount connection described in document 1 is easy for a person skilled in the art.</p> <p>The subject matters of claims 24-25 do not appear to involve an inventive step in view of documents 1-5. The joint objects described in claims 24-25 are well known, and employing them is merely a matter of design variation. The subject matter of claim 25 is an invention for a "matter" so called a "device". Unless a difference in "joint method" is found to be reflected directly with respect to the structure of the "device", only a difference in structure is a basis for determination on the novelty and involvement of an inventive step in comparison with the prior art. This respect should be noted when considering measures in future.</p> <p>In the subject matters of claims 3-4, the aspect of "spreading a gold film over a base material" in normal temperature jointing is neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.</p> <p>In the subject matter of claim 9, the aspect in which "the surface roughness <math>R_y</math> of the joint</p>			

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/000788

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

portion is 120 nm or more" in normal temperature jointing is neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.

In the subject matter of claim 10, the aspect in which "said joint objects are mutually pressed, said up-and-down mechanism is then stopped, and the height from said stage of said head is kept constant for a fixed time" in normal temperature jointing is neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.

In the subject matter of claim 13, the aspect in which said joint portion is treated with an energy wave when joint objects are not placed so as to face each other" is neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.

In the subject matter of claim 14, the aspect in which "when said joint portion is treated with an energy wave", "a metal film composed of a metal forming said metal electrode is formed on said joint surface of said joint object" by sputtering is neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.

In the subject matters of claims 15-18, the aspect in which "by jointing said joint objects on a solid layer at normal temperature, a space surrounded in the form of said outline by said joint portion is formed between the joint surfaces of said joint objects, and the space is sealed in a predetermined atmosphere" is neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.

In the subject matters of claims 19-23, the aspect in which "joint objects are mutually jointed in air" after treating joint matters with an energy wave is neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/000788

Box No. VI

Certain documents cited

1. Certain published documents (Rule 43bis.1 and 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
JP 2004-273941 A [E, X]	30.09.2004	11.03.2003	

2. Non-written disclosures (Rule 43bis.1 and 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)
--------------------------------	--	---

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/000788

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

The “stusupatta” described in page 15, line 4 is an error in writing that should be corrected as “supatta”.

The “stusupatta” described in page 15, line 20 is an error in writing that should be corrected as “supatta”.

In the description in page 37, lines 8 and 9: “the probe 1 is brought into contact with the electrode 1 on the upper surface of the light emitting element and the probe 2 is brought into contact with the electrode 2 on the upper surface of the substrate”, none of the reference symbols corresponds to those of the figures.

Claims 9, 11, 13, 14, 15, 17, 18, 19, 22, 24, 25, 31, 35, 39, 40, 41, 44, 45 and 48 have the description which is against the rule in PCT Rule 6.4(a): “multiple dependent claims should not be used as a base for other multiple dependent claims”.

Claims 26-49 include a limitation on the joint portion itself and the joint object itself such that “the hardness of the joint portion is 200 Hv or less”, but the subject of the invention is strictly a “jointing apparatus”, and how the limitation on the joint portion itself and the joint object itself is reflected for the structure of the “jointing apparatus” is unclear.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/000788

Box No. VIII      Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

In claims 1-49, the hardness of the joint portion is defined only as "200 Hv or less", but in light of Fig. 1 disclosed as grounds for setting the hardness in this range, it seems that a necessary joint strength cannot be obtained unless the requirement that the hardness should be "20 H or more" is met.

According to Fig. 4, it is understood that a sufficient joint strength is obtained when the surface roughness  $R_y$  of the joint portion is 120 nm or more and  $2\mu\text{m}$  or less, but in claims 9 and 35,  $R_y$  is defined only as 120 nm or more. Namely, concerning claims 9 and 35, the effect corresponding to the surface roughness is not supported for the case where  $R_y$  exceeds  $2\mu\text{m}$  in the specification.